Ham-Homebrew Digest   Sat, 18 Jun 94   Volume 94 : Issue 166

Today's Topics:
              "Renewal" reusable alkaline batteries (3 msgs)
                      Animal tracking (2 msgs)
                  Ceramic Filter IN/OUT Impedance
                   DC to DC High-voltage Modules
                              Help
                              Kits
                        PCB VIA LASERJET
            SBL-1 mixer: max DC current allowed (3 msgs)
                    Source for PC board material

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 17 Jun 1994 18:44:38 GMT
From: ihnp4.ucsd.edu!mvb.saic.com!MathWorks.Com!news.kei.com!ub!csn!
news.sinet.slb.com!news.San-Jose.ate.slb.com!jones@network.ucsd.edu
Subject: "Renewal" reusable alkaline batteries
To: ham-homebrew@ucsd.edu

George Cornelius (cornelius@eisner.decus.org) wrote:
: I am interested in information about Rayovac "Renewal" reusable alkaline
: batteries.
[...]
: Does anyone have experience with them or understand how they work? Is
: it possible to charge them yourselves, or are the specs for doing so
: being kept quiet by the manufacturer?

I've been using them since they first hit the market. One major problem
is that the AA size is only rated at 700mA peak current, and the typical
HT pulls a little over 1A at high power xmit. My experience is that this
significantly cuts down on the power output from an HT. However, if
you are using an HT to mostly monitor (mine pulls about 60mA with squelch
closed, about 120mA with squelch open at full volume), they work fine.

They have very low self-discharge rate. Ray-O-Vac claims 5 yrs, but I
haven't measured it (yet ;-).

Occasionally you'll run into a cell that the charger "never turns off" for.
Also, the recharge times in the literature seem pretty optomistic, at least
in my experience. (5 hours is the stated time for AA, but mine often take
nearly a day.)

The literature implies that the charger pulses the cells at 120Hz (gee...
wonder how they generate that! ;-) and measures the voltage between pulses,
shutting off when the cells are fully charged.

Every pack of them has an 800 number you can call. Ask them to send you
the data sheets. (Sorry, I don't have the number here.)

My recommendation is that they are good for places where a typical NiCd
would last at least 5 hours _under worst conditions_ (like with the xmit
button down at high power - so the typical HT is not a good candidate),
and where the typical alkaline battery would last less than 1 year of
"normal" service. (If it lasts longer than 1 year, probably cheaper to
just use normal alks.)

My biggest complaint is that they aren't available in the 9V size - I've
got a lot of applications where a 9V Renewal would be ideal. (Due to
the need to control each cell's charge separately, don't hold your breath
on seeing one soon, either.)

My only connection with Ray-O-Vac is as a (fairly) satisfied customer. ;-)

                           Clark
--
Disclaimer: The opinions expressed above are mine and not those of Schlumberger
because they are NOT covered by the patent agreement!

Phone: (602) 345-3638   Internet: jones@San-Jose.ate.slb.com
Packet: KI7TU@K7BUC.AZ.USA.NA   RF: KI7TU
Snail: Clark Jones, Schlumberger Technologies, 7855 S. River Pkwy #116, Tempe,
       AZ 85284-1825

Date: 17 Jun 1994 18:27:36 -0400
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!MathWorks.Com!panix!
not-for-mail@network.ucsd.edu
Subject: "Renewal" reusable alkaline batteries
To: ham-homebrew@ucsd.edu

In article <2tsqum$266@k2.san-jose.ate.slb.com>,
Clark Jones <jones@San-Jose.ate.slb.com> wrote:
>
>Occasionally you'll run into a cell that the charger "never turns off" for.

According to Rayovac, who replaced several of my cells for this problem,
the early batches were prone to develop internal shorts after a few
cycles. Send them back.

>The literature implies that the charger pulses the cells at 120Hz (gee...
>wonder how they generate that! ;-) and measures the voltage between pulses,
>shutting off when the cells are fully charged.

Actually it varies the duty cycle from about 70% (if I remember) down to
zero as the voltage rises. When the duty cycle falls to 25% the LED goes
out. However, since the big and small chargers have different peak
current, a 25% duty cycle will deliver different amounts of current when
the light goes out. The only way you'll get full capacity after removing
the cells immediately after the light goes out, is to use the big charger
only for C and D cells. If you charge Aa/AAA's leave them in overnight.

--
Mike Schuster | schuster@panix.com | 70346.1745@CompuServe.COM
------------------- | schuster@shell.portal.com | GEnie: MSCHUSTER

Date: Fri, 17 Jun 1994 13:41:25 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!math.ohio-state.edu!
magnus.acs.ohio-state.edu!usenet.ins.cwru.edu!nshore!seastar!jjw@network.ucsd.edu
Subject: "Renewal" reusable alkaline batteries
To: ham-homebrew@ucsd.edu

As quoted from <2tq6g4$kka@agate.berkeley.edu> by kennish@kabuki.EECS.Berkeley.EDU
(Ken A. Nishimura):

    <on the subject of Renewal batteries>

> My humble and personal opinion:
>
> They are not suited well for amateur use. They have a relatively
> short cycle life (25 cycles), with degrading capacity after

```
> 5 cycles.  The internal impedance is quite high, so that if
> you count on them to supply 1A of power, the terminal voltage
> will fall significantly.  They have a sloping discharge characteristic,
> so the last 50% of the cell capacity is supplied at 1.15V and less.
> They can't be quick charged.
>
> They are probably OK, for occasional use, where you may want to
> use alkalines in the first place.  But, for everyday cycling
> use, get NiCds.
>
> -Ken
```

   And after 25 re-charges they have degraded to *only as much*
capacity as a nicad has. The roll-off of voltage gives you some
indication that your batteries are dying, so you can finish a
conversation before replacing them. You can leave them in a scanner
for several months, and still expect them to be darned near to fully
functional when you need it.   They don't develop internal shorts that
make you think your pack is charged but it dies instantly when you use
it.
   The down side is they ain't worth squat in high-current
applications. If you *must* ALWAYS run your HT on the highest power
setting, these are not for you. I've had very good luck with them in
a DJ-580 on medium and low power, even accidentally leaving it on
overnight *after* heavy use that day, and it was still working the
next day.
   They cannot be quick-charged (which tends to mean an early grave
for ni-cads if done often).
   Many rigs can charge the ni-cads while running off of 12 volts from
the car. Renewals won't do this.

   I'd say they would work well for amateur radio, given that you live
with the FCC regs requiring *only as much power as necessary for the
desired communications*.

```
--
While (its_not_working())                          John Welch, N9JZW
  mess_with_it();                                  jjw@seastar.org
```

In article <1994Jun15.144631.19774@kd4dts.atl.ga.us>, jcw@kd4dts.atl.ga.us (John

C. Wren) writes:
> Wouldn't it be easier to put some kind of electronic perimeter fence (laser,
> capacitive, siesmic) and just go tearing out there with you Uzi in hand,
> instead? With the constraints you've placed on the transmitter, current

I've often thought it would be kinda neat to do the following:

1) Set-up a perimeter fence with a hi-powered (i.e. industrial metal-cutting)
laser.

2) Design a control system that would operate the laser in a pulsed (i.e. PWM'd)
fashion at some rediculously LOW duty cycle (like .1%) so that it can be detected
by a standard IR phototransistor.

3) When something breaks the beam (i.e. someone walking into/outof the protected
zone) the controller would crank-up the duty cycle to 100% for a 1 second period.

4) Pfffffffft . . . no more intruder.
--
James C. Bach   Ph: (317)-451-0455   The views & opinions expressed
Advanced Project Engr.   GM-NET: 8-322-0455   herein are mine alone, and are
Circuits Bldg Blocks Grp Amateur Radio: WY9F   NOT endorsed, sponsored, nor
Delco Electronics Corp.   Just say NO to UNIX!   encouraged by DE or GM.

Date: Fri, 17 Jun 1994 17:09:57 GMT
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!
newsxfer.itd.umich.edu!news1.oakland.edu!rcsuna.gmr.com!kocrsv01!
jcbach@network.ucsd.edu
Subject: Animal tracking
To: ham-homebrew@ucsd.edu

In article <9406151151.aa28242@post.demon.co.uk>, Richard@mole.demon.co.uk
(Richard Smith) writes:
> A friend is having trouble with sheep rustling - he's has about 70 stolen
> this summer so far. The local Police won't do anything unless we can tell
> them who's taking the sheep!
>
> We were thinking of radio tracking to find out where they're going, but
> there's a few problems.
> 1. The sheep-mounted bit must be very, very, small and have an invisible
> antenna.
> 2. Need a battery life of about ten weeks
> 3. Range of about 30 miles in hilly terrain
> 4. The sheep bit must be cheap enough to be disposable
> 5. The sheep are going missing from a piece of land wityh no obvious gates,
> so they can't be sent through any sort of localised security gate.

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> 6. The animals may be transported in an aluminium trailer!
>
> I've been thinking of a transponder on the sheep, and a directional
> tracker, but I shudder at the thought of building such beasties!
>
> Anyone with any thoughts? Anyone experienced this problem before? and solved it?
>
> Thanks
>
> Richard Smith (richard@mole.demon.co.uk)
>
> Antique & classic Auto restorer, Agricultural engineer, shepherd,
> electrician, electronics design engineer (in order of income!)
>
>
```

How BIG is the "ranch" . . . i.e. might one construct a tall "watch tower" that
can be used to observe the entire estate?

If so, perhaps a more robust scheme would be to build said watch tower, buy a
high-power quick-fire riffle with a night-vision scope on it, buy a big coffee
pot, and hire a few of the local gun-nuts to stand watch. When they see someone
stealing the sheep they pick-off the thieves with a few rounds. You simply load
the dead/wounded bodies into the back of an old pick-up truck and drop them off
at the doorstep of the local cop who is too lazy to do his job. I think after
one of these episodes any further sheep-stealing will be done at someone ELSEs
ranch!

```
--
James C. Bach           Ph: (317)-451-0455    The views & opinions expressed
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Circuits Bldg Blocks Grp Amateur Radio: WY9F  NOT endorsed, sponsored, nor
Delco Electronics Corp.  Just say NO to UNIX! encouraged by DE or GM.
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Date: Sat, 18 Jun 1994 00:29:33 GMT
From: ihnp4.ucsd.edu!library.ucla.edu!csulb.edu!csus.edu!netcom.com!
wa2ise@network.ucsd.edu
Subject: Ceramic Filter IN/OUT Impedance
To: ham-homebrew@ucsd.edu

If memory serves, these things have an impedance of around 300 ohms.You'd
probably need to use the tapped IF transformers commonly found in
older transistor radios. Don't know if they can take tube voltages
though.

Date: 17 Jun 1994 20:59:52 -0500
From: elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!uwm.edu!omnifest.uwm.edu!
omnifest.uwm.edu!not-for-mail@ames.arpa
Subject: DC to DC High-voltage Modules
To: ham-homebrew@ucsd.edu

Have a number of 12VDC input 3000VDC@10ma output modules. 1/2" X 1 1/4" X
2 1/2". Any builder out there have a creative plan for their use? If so,
E-mail to: raym@omnifest.uwm.edu and we'll negociate.
###

Date: Mon, 13 Jun 94 21:36:00 +0000
From: nashex!john.davis@uunet.uu.net
Subject: Help
To: ham-homebrew@ucsd.edu

Could somebody please email me the address of the moderator for this
newsgroup. Thanx.
john.davis@nashville.com

Date: 17 Jun 94 11:49:23 EDT
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!sundog.tiac.net!
usenet.elf.com!rpi!psinntp!main03!landisj@network.ucsd.edu
Subject: Kits
To: ham-homebrew@ucsd.edu

 In rec.radio.amateur.homebrew, mgalatz@panix.com (Menachem Galatz DC) writes:

> Is there such a thing as a kit to build a tube receiver

There are lots of tube circuits in the older Radio Amateur Handbooks. I have a
'64 edition that is loaded. No - I won't part with it:) I've seen this kind of
stuff for sale at hamfests though. Also a good place to find the parts. I even
still have some receiving tubes, caps, and a few 125V/6.3V transformers
around.

Joe
--
Joe Landis - System & Network Mgr. - North American Drager Co. Telford, PA
landisj@drager.com | uupsi5!main03!landisj | AA3GN@WB3JOE.#EPA.PA.USA
Opinions are mine only, and do not reflect those of my employer.

Date: Tue, 14 Jun 94 02:01:00 -0500
From: ihnp4.ucsd.edu!agate!iat.holonet.net!wwswinc!
norman.cardillo@network.ucsd.edu
Subject: PCB VIA LASERJET
To: ham-homebrew@ucsd.edu

This looks interesting! I will have to try it sometime!

--- FLAME v1.0
 * Origin: Tom's BBS * Milton, MA 617-698-8649 (1:101/470)

Date: Fri, 17 Jun 1994 16:29:35 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!europa.eng.gtefsd.com!
uhog.mit.edu!news.kei.com!ssd.intel.com!rlt@network.ucsd.edu
Subject: SBL-1 mixer: max DC current allowed
To: ham-homebrew@ucsd.edu

I have a question that repeated calls to Mini-Circuits have not been able
to resolve. That is, what is the maximum dc current that can flow thru
the rf or lo ports of an SBL-1 mixer without any significant performance
degradation. I want to use the rf and lo ports as a dc return to ground
to reduce part count in my design. I would hope to pass 10-15ma through
the ports. I am using the part between 3-30mhz, as a small signal mixer.

Thank you,

Roger Traylor
rlt@ssd.intel.com
--
    Roger Traylor
    rlt@ssd.intel.com
    Intel Corporation - Supercomputer Systems Division
    Beaverton, OR 97006

Date: 17 Jun 1994 17:21:41 GMT
From: ihnp4.ucsd.edu!sdd.hp.com!hpscit.sc.hp.com!rkarlqu@network.ucsd.edu
Subject: SBL-1 mixer: max DC current allowed
To: ham-homebrew@ucsd.edu

In article <CrJv5C.1sB@ssd.intel.com>, Roger Traylor <rlt@ssd.intel.com> wrote:
>I have a question that repeated calls to Mini-Circuits have not been able
>to resolve. That is, what is the maximum dc current that can flow thru
>the rf or lo ports of an SBL-1 mixer without any significant performance
>degradation. I want to use the rf and lo ports as a dc return to ground

>to reduce part count in my design. I would hope to pass 10-15ma through
>the ports. I am using the part between 3-30mhz, as a small signal mixer.
>
>Thank you,
>
>Roger Traylor
>rlt@ssd.intel.com
>--
>   Roger Traylor
>   rlt@ssd.intel.com
>   Intel Corporation - Supercomputer Systems Division
>   Beaverton, OR 97006

It seems to me that Minicircuits has published information on DC ratings.
Instead of calling them, look thru all their literature. (I haven't
had much luck calling them with technical questions).
In any case, you shouldn't have any trouble if you're only running 10 or
15 mA. thru the windings.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

Date: Fri, 17 Jun 1994 18:15:26 GMT
From: ihnp4.ucsd.edu!sdd.hp.com!saimiri.primate.wisc.edu!aplcenmp!joses-
mac.jhuapl.edu!user@network.ucsd.edu
Subject: SBL-1 mixer: max DC current allowed
To: ham-homebrew@ucsd.edu

In article <CrJv5C.1sB@SSD.intel.com>, rlt@ssd.intel.com (Roger Traylor)
wrote:
>
> I have a question that repeated calls to Mini-Circuits have not been able
> to resolve. That is, what is the maximum dc current that can flow thru
> the rf or lo ports of an SBL-1 mixer without any significant performance
> degradation. I want to use the rf and lo ports as a dc return to ground
> to reduce part count in my design. I would hope to pass 10-15ma through
> the ports. I am using the part between 3-30mhz, as a small signal mixer.

That's a good question. First of all, according to MCL's data sheet on
the SBL-1, both the RF and the LO inputs connect to a winding of a
transformer (no doubt wound on a toroid). The wire used is probably
fairly large (28-32 gauge) so there's no real concern about current
handling. There is a question about what RF of LO current will cause
saturation in the transformers.

The data sheet only says that the absolute max RF or LO power is 50 mW

and that the absolute max IF peak current is 40 mA. I'm guessing the
IF current restriction is to protect the diodes. So, looking at the
RF/LO restriction, 50 mW corresponds to about 32 mA RMS, or 45 mA peak.
Since MCL won't give you any better info, my guess is to design your
circuit such that the peak current through the RF pin or the LO pin
won't exceed 45 mA. In your case, that would be your 15 mADC plus the
peak signal current.

Marshall Jose, WA3VPZ
josemj1@aplmail.jhuapl.edu

Date: Fri, 17 Jun 1994 16:31:31 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!europa.eng.gtefsd.com!
uhog.mit.edu!news.kei.com!ssd.intel.com!rlt@network.ucsd.edu
Subject: Source for PC board material
To: ham-homebrew@ucsd.edu

Can someone advise me as to a cheap source for one and/or two sided
PC board material.

Thanks,

Roger Traylor
rlt@ssd.intel.com
--
    Roger Traylor
    rlt@ssd.intel.com
    Intel Corporation - Supercomputer Systems Division
    Beaverton, OR 97006

End of Ham-Homebrew Digest V94 #166
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